Artículos

Mediation of innovation in business modeling and performance post-COVID-19

Mediación de la innovación en el modelamiento de negocio y el rendimiento post COVID-19

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Abstract

The state of the art on the phenomenon of business model innovation has received attention from academics in times of uncertainty due to Covid-19, affecting all types of companies in different contexts. The purpose of the study is to systematically review the content and evolution of academic research related to business model innovation (IMN) and the

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impact on business performance (ER), modeled by Covid-19, influencing the relationship of the variables. The review was carried out from 2017 to 2021. The information search was carried out in an orderly and progressive manner, in the Web of Science (Clarivate Analitics) and Scopus databases. For the measurement of journals, the Journal Citation Reports (JCR) and (SJR Quartile) were used; selecting 60 articles in a first filter, and then choosing 27. The results found in the articles were a positive relationship between the IMN and the RE, through various drivers that configure it, also considering the context and turbulence of the type of industry. In conclusion, research should explore the IMN in SMEs, by investigating new drivers, mediating and moderating variables that increase ER.

Keywords: Business modeling, innovation, business performance.

Resumen

El estado del arte sobre el fenómeno de innovación del modelo de negocio, ha recibido atención de académicos en tiempos de incertidumbre por el Covid-19, afectando todo tipo de empresas en diferentes contextos. El propósito del estudio es revisar sistemáticamente el contenido y evolución de la investigación académica relacionado a la innovación del modelo de negocio (IMN) y el impacto en el rendimiento empresarial (RE), modelado por Covid-19 incidiendo en la relación de las variables. La revisión se efectuó desde el 2017 al 2021. Se efectuó la búsqueda de información de manera ordenada y progresiva, en la base de datos Web of Science (Clarivate Analitics) y Scopus. Para la medición de revistas, se utilizó el Journal Citation Reports (JCR) y (SJR Quartile); seleccionando 60 artículos en un primer filtro, para luego escoger 27. Los resultados encontrados en los artículos, fue una relación positiva entre la IMN y el RE, mediante varios impulsores que la configuran, además considera el contexto y la turbulencia del tipo de industria. En conclusión, las investigaciones deben explorar la IMN en las pymes, mediante la investigación de nuevos impulsores, variables.

Palabras clave: Modelamiento de negocio, innovación, rendimiento empresarial.

Introduction

In 2021 the world is going through a Sars-Cov-2 pandemic that is affecting all countries and to a great extent small and medium enterprises. For this reason, companies are looking to innovate their business models and adapt to the new environment brought by the pandemic in order to improve their performance, which will allow them to survive the changes generated in the market. In the literature review related to innovation and business performance, a common misunderstanding is the belief by some people and organizations that an innovation must be something completely new and radical in nature; minor incremental innovation does not count (Kahn, 2018).

Successful organizations understand that innovation sits on a continuum from small incremental changes to large radical innovations; innovation is not a binary phenomenon. Another common misunderstanding is the tendency of some people and organizations to casually use the terms innovator and innovativeness as synonyms for innovation (Christensen et al., 2018). Innovative is an adjective, whereas innovativeness is a noun. Innovative is a noun, but it describes innovativeness. The term innovation is defined in two ways: (1) the introduction of something new, or (2) a new idea, method, or device (Schilling & Shankar, 2019). On the other hand, business models as simplified representations of the value proposition, value creation and delivery, and value capture elements and the interactions between these elements within an organizational unit (Geissdoerfer et al., 2018).

Likewise, it defines that a business model is a description of an organization and how it functions to achieve its goals (e.g., profitability, growth, social impact) (Massa et al., 2017); stating that business model innovators earn four times more returns than product innovators (Bashir & Verma, 2017); concluding that the particular characteristics of business model innovation and discusses three streams of research that respond to both prerequisites, process and elements (Zhao et al., 2017); to this end, scholars have merged all types of innovation into a single phenomenon that is called business model, treated as a whole in an organization (Anwar, 2018); arguing that IMN can be defined as a reconfiguration of choices in organizations on the components of the business model (Jang et al., 2020).

In the literature there is no consensus on the definition of business performance; which, generally performance can be measured with Return on Assets (ROA), Return on Equity (ROAE) and Return on Investment (ROI) (Anwar, 2018). It can be considered to measure performance relative to competitors, on a digital Venkatraman (three types of actors and three types of strategies or phases) scale (Clauss et al., 2019). The research aims at a literature review on the configuration and relationship of IMN and ER in SMEs. In this environment, the recent global crisis caused by the Covid-19 pandemic became a propitious accelerator for organizations and governments to consider transforming themselves technologically and rethinking their strategic lines, giving continuity to the business and being sustainable in the post Covid-19 digital era (Winarsih et al., 2020).

In a digital world managing cultural situations is not optional, especially if the business model is considered a barrier or a driver in the digital transformation of a company (Goran et al., 2017), below, we describe the main definitions of the study variables, as well as the main models that have been used for the investigation of these and their relationship.

Innovations are inherently cultural and material in nature (Höllerer et al., 2018), but the articles in this issue make it clear that few scholars have unraveled how culture is enshrined in technological artifacts and how culture enables the creation of new material expressions (Lounsbury et al., 2018). The literature concerning innovation in SMEs has clearly defined the goal that is required to be achieved: to increase the value of firms. Innovation in the Oslo manual defines it as the application of a new or significantly improved product (good or service), or process, a new marketing method, or a new organizational method in business practices, workplace organization or external relations (Yachin, 2019). The most relevant approaches point to innovation as the proposal, creation and capture of value (Clauss et al., 2019), being one of the most widely used approaches in research in companies.

The concept of business model is closely linked to the concept of value in most of the literature on business models (Bocken et al., 2018). On the other hand, several authors' approaches and suggested a generic framework composed of four elements: the value proposition (the value embedded in the products/services offered by the company); the supply chain (the relationships with suppliers); the customer interface (the

relationships with customers); and the financial model (the cost and benefits, and their distribution among stakeholders) (Yang et al, 2017).

From the review of established that business model innovation involves doing something new, creating something new or different in an existing business, it is a new logic for doing things, creating value for all stakeholders (Hamelink & Opdenakker, 2019). The instruments to measure IMN, developed an instrument that measures the creation, proposal and capture of value in three dimensions with 17 indicators (Clauss et al., 2017); setting that IMN can be studied from the configuration, development and implementation of administrative care, through instruments for each variable (Mongelli & Rullani (2017) (Barros & Turpo, 2017), (Gamboa et al., 2019).

Studies indicated that the dimensions on business performance of SMEs, performance variables such as, sales, financial profit and productivity costs are mainly considered (Nemlioglu & Mallick, 2017). It was concluded that, in the financial dimension of business performance, evidence of higher financial margins obtained by innovative SMEs has been observed (Expósito & Sanchis, 2018). With respect to the above, it should be said that business model innovation with business performance has a high theoretical support accepted by academia and companies (Anwar, 2018). Likewise, performance was analyzed from the point of view of assets, equity and investment.

Research stated that business model innovators earn four times more returns than product innovators (Bashir & Verma, 2017). There are several criticisms of this relationship and how it interacts in SMEs. In studies conducted indicated that the relationship between innovation and business performance has to be analyzed from a multidimensional analytical approach (Exposito & Sanchis, 2018). It was posited that when customers acquire new value from products and services, business model innovation can stimulate their desire to purchase novel products and services and improve firm performance (Velu, 2017; Cepeda et al., 2019). argued that IMN can create a barrier to imitation, establish a barrier to entry, and increase firm performance (Pang et al., 2019).

Likewise, it was argued that, focusing on the financial dimension of business performance, it has been observed that robust evidence illustrates higher financial margins obtained by innovative SMEs, under a cost approach (Expósito & Sanchis, 2018). In another rigorous high-level research, they applied an instrument that due to

its multidimensional nature, four core elements were analyzed (1) Value offering architecture, (2) internal value creation architecture, (3) external value creation architecture, and (4) financial architecture; a seven-point Likert scale was used for this purpose (Futterer et al., 2018). In studies conducted, a questionnaire was applied that distinguishes between four alternative indicators with respect to business performance, two indices of measure finances and two measure the operational dimension (Expósito & Sanchis, 2018).

Materials and Methods

In the literature review, the following steps were carried out, (a) First, the Web of Science and Scopus databases were reviewed for the highest impact journals and their relationship with the topic of study with the following equation: ("innovation" OR "business model" OR "business model innovation") and ("business performance" OR "business profitability") and ("SMEs"). We obtained 78 documents from Web of Science and 172 from Scopus, giving a total of 250 documents; (b) Secondly, of the 250 articles, 60 were selected by level of importance and relationship with the topic of study; and of these 60 articles, 27 were selected from the Q1 and Q2 level. According to the database obtained, 85% are scientific articles, followed by 11% of scientific conferences-presentation of articles, the other documents are less than 2%. The articles are filtered by Scimago impact since 1999 for Scopus and since 2010 for Web of Science, by the impact level of the journal, from Q1 to Q4, classified the articles by type of database.

A rigorous review of all the articles related to the IMN and SR was carried out, and the most cited articles were selected for reading and analysis. This search method allowed obtaining 60 articles for review and analysis, 17 and 10 documents were chosen from the Web of Science and Scopus respectively, totaling 27 articles. This made it possible to analyze articles from the last 10 years and with a high quality impact factor from Q1 and Q2 journals, which allowed us to know the main findings, components of the variables, the researchers' approaches, recommendations and their most current way of measuring the IMN and RE.

Results

In the review of selected articles, 27 articles were chosen, which were published in 15 Web of Science journals and eight in Scopus. For the case study a journal impact level (JCR) Q1 and Q2 was selected. The literature on innovation in SMEs has clearly defined the objective to be achieved, which is to increase the value of companies. The variables that influence the promotion of innovation are creativity and entrepreneurship. On the other hand, 74% of the articles analyzed are Q1, while articles with a Q2 level represent 26%. These 27 articles deal with empirical research and literature review on the relationship between business model innovation and business performance. Journal impact factors are detailed according to JCR from highest to lowest, with cut-off date 2021. The methods used by the researchers to obtain the information and to be able to establish its treatment and analysis are presented. Fifty-six percent used other quantitative methods, largely because of the performance variable. Eleven percent used surveys and mixed research and 22% used other types of data collection methods. The relationship between the IMN and the ER has been treated for the most part by a quantitative type of research, with a strong treatment of numerical and statistical data.

The countries where the 27 articles, which study the relationship between the IMN and the ER, are published are the United Kingdom, a country interested in innovation, leader at industrial and technological level; it has 48% of the research published in its journals, while 26% of the research is published in journals of the Netherlands, with a high JCR impact; while 11% of the research is published in journals of the United States, even being one of the main countries in innovation it is in third place, while Singapore, Switzerland and India add 15% of the articles published in their research journals.

Fourteen articles study the relationship between IMN and RE in large companies, representing 52% of the articles chosen. Large companies can obtain better returns on investment in innovation and have lower risk. On the other hand, 41% of the articles studied investigate the relationship between MNE and NoE in small and medium-sized companies, which are initiating a process of change by innovating, but do not yet

have sufficient resources to be able to sustain themselves in the long term. Finally, two articles conducted a literature review on the treatise proposed in this study on instruments and measurement of variables.

According to the above, 44% of the articles found a conditional positive relationship between business model innovation and business performance, while 26% established a relationship between the study variables positive and positive, conditional negative. One article established a negative relationship, it could be observed that the researches conducted do not have a direct relationship between BMI and ER, there are moderating and mediating variables that affect this relationship and the recommendations for future research are the use of these variables. Finally, the 27 articles are detailed by authors, article title, number of citations per article, findings and conclusions.

Table 1 *General conclusions of each selected article*

Author(s)	Title of articles	Findings and Conclusions
Geissdoerfer, M., Vladimirova, D., Evans, S (2018).	Sustainable business model innovation: a review (Scopus).	The research provides a review of the literature, using a systematic database search. Its contributions are: (1) a review of the concepts discuss their similarities and differences (2) we identify a research gap; and (3) we derive research questions to address the gap.
Yang, M. Evans, S. Vladimirova, D., Rana, P (2017).	Assess the uncaptured perspective for sustainable business model innovation (Scopus).	This research proposes uncaptured value as a new perspective for sustainable business model innovation and develops four forms of uncaptured value: surplus value, no value, lost value and destroyed value.
Clauss, T (2017).	Innovation and business model measurement: concept, scale-up	In this study, a scale for internal and external evaluation of Business Model Innovation was developed to provide managers with an instrument for their strategic planning. The

	development and performance test (Web of Science).	scale was validated with 10 constructs in 358 companies. It can be applied to other types of companies and different groups.
Anwar, M (2018)	Business Model Innovation and SME performance: does it mediate competitive advantage? (Web of Science).	The results indicate that the IMN has a significant positive impact on the competitive advantage and performance of SMEs. Competitive advantage partially mediates.
Futterer, F. Schmidt, J. and Heidenreich, S (2018).	Effect or causality, key to corporate business success? Effects of entrepreneurial behaviors on business model innovation and firm performance (Web of Science).	The study found support for the assumed positive effect of causality on IMN in corporate firms. It is in line with previous research on innovation management that has provided evidence of relationships between constructs adjacent to causality and innovation performance.

Author(s)	**Title of articles**	**Findings and Conclusions**
Jajja, M. S. S S., Kannan, V R., Brah, S. A. and Hassan, S Z. (2018)	Links between innovation, supplier, product innovation and business performance. Dependency theory (Web of Science).	Results support all hypotheses and suggest that firm (buyer) age and variables related to buyer commitment to international markets directly influence performance. Identifies several organizational factors that influence innovation in the Indian and Pakistani context.

Mennens, K. Van Gils, A. Odekerken-Schröder, G. Letterie, W (2018).	Exploring the antecedents of service innovation performance in manufacturing SMEs. (Web of Science).	Absorptive capacity is a critical factor, which in turn can be driven by employee collaboration and a company's breadth of search. Findings from a study of small and medium-sized Dutch manufacturing companies confirm that employee collaboration and breadth of search have positive effects on performance.
Exposito, A. Sanchis, J. A. (2018)	Innovation and business performance for Spanish SMEs (Web of Science).	Product innovation has a clear and significant positive impact on sales, while organizational innovation increases the likelihood of cost reduction.
Zhang, C. Campana, P.E. Yang, J., Yan J., J. (2017)	Economic performance of photovoltaic water pumping systems with business model innovation in China. (Web of Science).	This paper studied the added value of PVWP technologies with emphasis on the integration of the value proposition with the operating system and customer segmentation. The results show that the PVWP system integrated with social networking products significantly improves financial performance.
Bouwman, H. Nikou, S., de Reuver, M (2019).	Digitalization, business models and SMEs: How do innovation practices improve? (Web of Science)	This paper examines whether SMEs that undergo a digital transformation perform better. SMEs by innovating their business model, and their digital processes achieve higher performance than the competition.
Dewi, S. Ahamat, A. (2018)	Entrepreneurial focus on performance achievement through business	This study examines the role of entrepreneurial orientation in achieving improved firm performance through the mediation of business model innovation. The results of this study concluded that hospital

	model innovation and relational asset collaboration (Scopus).	entrepreneurial orientation has a significant positive impact on the achievement of organizational performance.
Clauss, T. Abebe, M. Tangpong, C. Hock, M (2018).	Strategic agility, business model innovation and business performance: an empirical investigation. (Scopus).	This paper measures firm-level strategic agility predicts the adoption of three types of IMNs. Our empirical findings indicate that strategic agility (comprising strategic sensitivity, unity of leadership, and resource fluidity) was positively associated with three dimensions of the IMN.
Hamelink, M. and Opdenakker, R (2019).	Business model innovation affects company performance (Web of Science).	The results show that business model innovation affects the performance of companies in the energy storage market, improves customer satisfaction and the reduction of fossil fuels.
Guo, B., Pang X., Li, W (2018).	The role of the team in shaping business model innovation performance: a threshold effect (Scopus).	When the functional diversity of top management reaches a certain level, the positive relationship between the novelty-focused business model and company performance becomes more pronounced.

Author(s)	**Title of articles**	**Findings and Conclusions**
Guo, H., Tang J., Su, Z., Katz J.A. (2017)	Opportunity and performance recognition: the effect of business model innovation (Web of Science).	This study proposes that business model innovation may be a key conduit through which opportunity recognition affects SME performance. We find a positive relationship between opportunity recognition and performance.
Ma, Y., Yin, Q. Pan, Y., Cui, W.	Product innovation and performance:	The results show that business model design issues play a moderating effect on the

Xin, B., and Rao, Z. (2018)	the effect of efficiency-focused business model design. (Web of Science)	relationship between green product innovation and a business performance, while a performance between green product innovation and design-focused novelty issue is better for a performance.
Pang, C., Wang Q., Li, Y., and Duan, G (2019).	Business model integration, innovation and performance: Impact on business strategy. (Web of Science).	The results show that IMN positively mediates the relationship between integrative capability and firm performance in Chinese firms. The mediating effect of IMN suggests that managers should pay more attention to IMN to improve performance.
Asemokha, A. Musona, J. Torkkeli, L. and Saarenketo, S. (2019)	Business model innovation and entrepreneurially oriented relationships in SMEs (Web of Science).	The results suggest that the IMN index positively and significantly mediates the relationship between entrepreneurial orientations (EO) and international performance. In addition, EO has a positive and significant effect on IMN SMEs.
Gatautis†, R. Vaiciukynaite, E., and Tarute A. (2019).	Impact of innovations on the innovation business model and performance of SMEs. (Web of Science).	From the SEM results, four drivers (innovation activities, strategic orientation, market and technology turbulence, respectively) are indicated to contribute positively to SME NMI.
Ibarra, D. Bigdeli, A.Z. Igartua, J.I. Ganzarain, J (2020).	Business model innovation in established SMEs (Scopus).	The findings suggest that customers are one of the most important sources of knowledge for the IMN that increases firm performance.

Bhatti, S.H. Santoro, G. Khan, J. Rizzato, F (2021).	Background and consequences of business model innovation in industry (Scopus).	Industry competition negatively influences the degree of business model innovation. At the firm level we find a positive relationship between the degree of IMN and innovation performance.
Jang, Y., Song K., Park, M. Ahn, Y. (2020).	Classification of the types of business models of international construction contractors. (Scopus)	Its ultimate purpose was to determine empirically how current business model types and their performance can be used in business model innovation. Type selection results in a significant difference in performance. The model allows a company to capture more value from its business models.
Zhang, H. Xiao, H., Wang Y., (...), Akram M.S., Goraya M.A.S. (2020)	An integration of antecedents and outcomes of business model innovation: a meta-analytic review. (Scopus)	The results validate a significant positive association between external and internal antecedents and the IMN. Likewise, the IMN is positively associated with firm performance.

Discussion

The literature review from 2017 - 2021, is to deepen the knowledge and understanding of these relationships in a largely understudied area of strategic business management. The relationship between IMN and RE is critical for managers. When implementing an efficient innovation strategy, the performance-innovation relationship should be considered from a multidimensional approach for the purpose of having a secure return on resources as an effect of innovation efforts (Guo et al., 2018).

The concepts, measurement and validity of measurement instruments are currently one of the objections among researchers (Ibarra et al., 2020); this is how a first comprehensive measurement scale for measuring business model innovation is proposed, being the most cited for the last four years (Clauss et al., 2017). It is based

on three dimensions and ten subconstructs giving some clarity to this topic. In contrast argued a new way of measurement in IMN, processes, model elements and effects, one can integrate these models as constructs (Zhao et al., 2017).

At scale, a second measure of IMN is proposed (Clauss et al., 2017), based on the studies, value creation, value proposition and value capture were considered, oriented to strengthen the study dimensions proposed in the nine business blocks (Asemoka et al., 2019). In the managerial implications, the researchers consider that for an effective efficiency of company performance, an adequate administration is required (Guo et al, 2017); for this they proposed a configuration, development and implementation approach in the administrative area, measuring performance in customer service, achieving that management is the cornerstone of the innovation process (Mongelli & Rullani, 2017).

In the selected articles of higher citation, a strong relationship between IMN and RE is established; finding a relationship between innovation results; financial performance and market performance (Rajapathirana & Hui, 2018); which can evaluate market conditions, being an additional component to the internal factors of productivity and finance proposed in their models by researchers (Expósito & Sanchis, 2018; Anwar, 2018). In itself each time with the increase of globalization and technology, the authors propose to incorporate in the business models external variables and synchronize with the models already validated internally of SMEs, with the aim of obtaining business results (Ma et al., 2018; Mennens et al., 2018).

Other business attributes and strategic perspectives and orientations such as learning orientation and market orientation are considered to explore ER activities (Asemokha et al.,2019). Organizational culture that can motivate innovative behavior, internal coordination with employee to foster innovation-driven mindset that leads to ideas and concepts to successful products/services, processes, business models or systems are discussed in most articles as factors affecting the relationship between IMN and ER (Rajapathirana & Hui, 2018).

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